Memo

To
CHPS

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14

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Subject
Release Notes CHPS for FEWS release 2015.02

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1 Introduction

This FEWS release contains of

- a FEWS stable 2015.02 build
- install notes
- release notes general
- **release notes CHPS**
- configuration update document

This document holds the release notes specific for the CHPS applications for NWS and BPA. For general release notes of the 2015.02 releases, please see the documents below. These can also be found with better visibility at http://publicwiki.deltares.nl/display/FEWSDOC/Delft-FEWS+Release+Notes where you can also find information about the 2015.01 release:

- 2015.02 FEWS General Release Notes.pdf
- 2015.02_NewDevelopments.pdf (PowerPoint presentation showing subset of new features)

Content of this document:

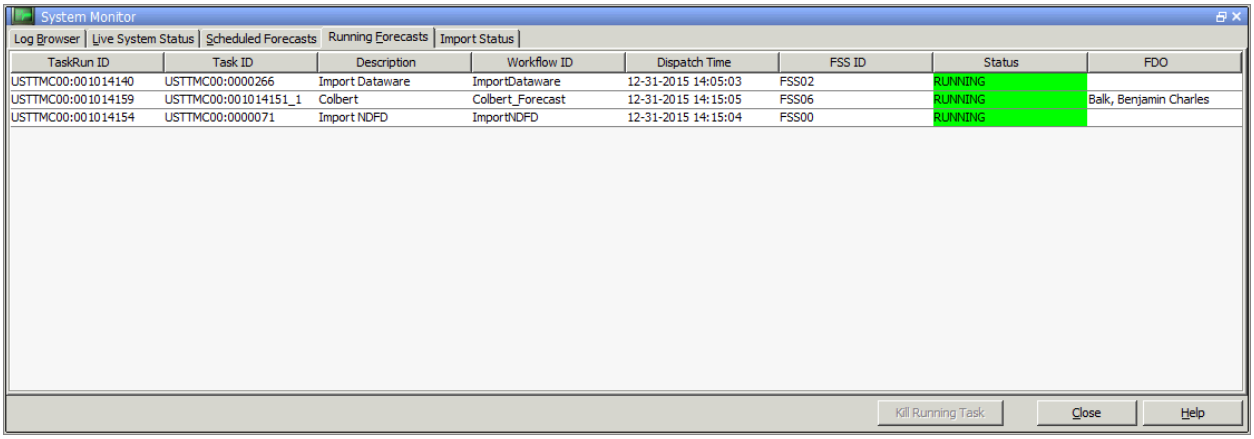
2 New features

New features designed for NWS and BPA are listed in the table below. To configure the new enhancements, please see the configuration update document.

FB	JIRA	Description
FB 176		Include the username (userid) of who submitted a task
FB 270	FEWS-13066	Change SHEF export to include 3 decimals
FB 327		Center Plot Table at T0
FB 1187	FEWS-13485	Adding Date to HTML report file name
FB 1602	FEWS-13672	FEWS to work with PostgreSQL 9.3.9
FB 1623	FEWS-13264	Rating Plot enhancements
FB 1856	FEWS-13673	Remove Global Writeable Permission Bit from FEWS Generated Files
FB 1880	FEWS-13674	Automatic “temporary” timeseries setting in FEWS

2.1 Include the username (userid) of who submitted a task (FB 176)

The userid of the person who submitted a task will now display on the Running Forecasts tab in the System Monitor under the FDO column.



2.2 Change SHEF export to include 3 decimals (FB 270)

A fix was made for the SHEF export. It previously did not use the valueResolution properly in the Parameters.xml. The valueResolution for all parameters should be the one that user wants divided by the unit in the unit conversion file.

The number of decimals is a result of the valueResolution and the unit conversion. The valueResolution for all parameters should be the one that includes unit conversion (user wanted, e.g. 0.01, divided by the unit in the unit conversion file).

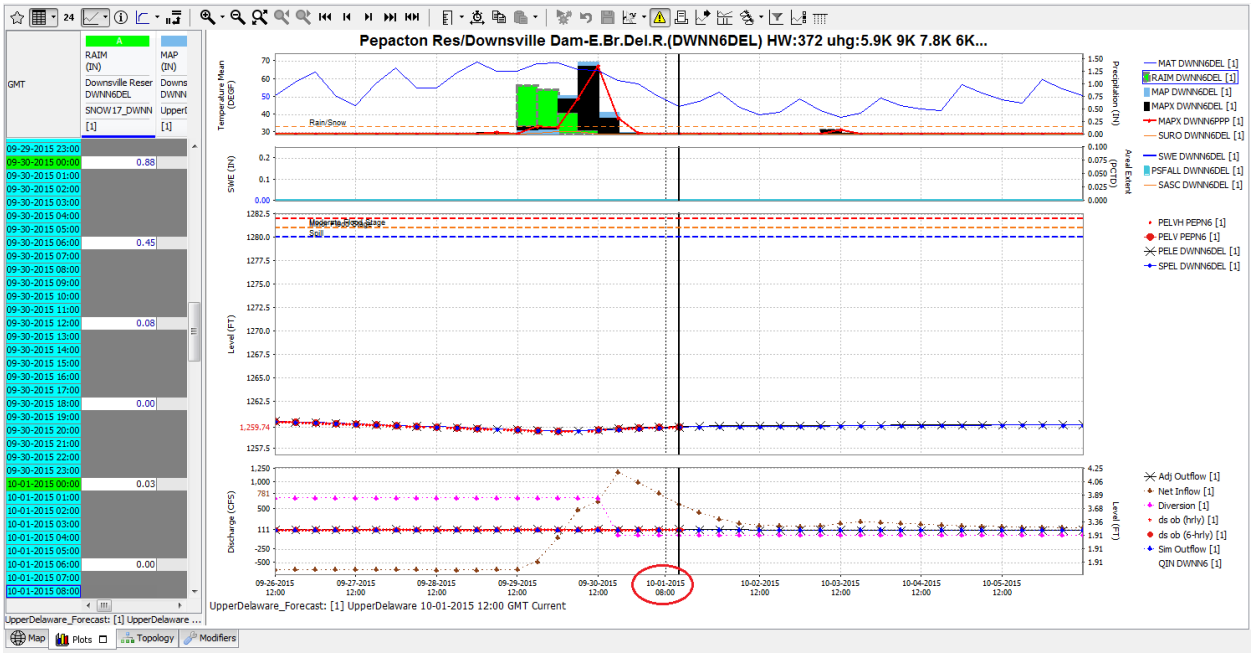
For example, say you want to export the parameter SWE in inches with a precision of 2 decimal points, e.g. 0.01. Take 0.01/0.03937007874016=0.254.

In this case the 0.03937007874016 value is the unit conversion multiplier specified in the ExportSHEF unitConversions file to convert MM to IN.

You would then designate the valueResolution for the desired parameterGroup to be 0.254.

2.3 Center Plot Table at T0 (FB 327)

The Plots table always displays the first value in time from the display. However, some forecasters want to center this table on T0. The forecast can scroll to center this table to the desired time or simply select in the graph a point close to T0 or the desired time and the table will adjust itself.



2.4 Add Date to HTML report file name (FB 1187)

HTML report filename can use CURRENTTIME and TIMEZERO tags.

Two new tags have been added to configure the outputFileName of reports:
%CURRENTTIME(dateFormatId)%: The CURRENTTIME tag will be replaced by the current system time. An optional dateFormat id can be specified.

%TIMEZERO(reportVariableId;dateFormatId)%: The TIMEZERO tag will be replaced by the minimum T0 of the timeSeries configured by the reportVariableId. If no timeseries are configured, the current system time will be used. The reportVariableId is required. An optional dateFormat id can be specified.

See also:
https://publicwiki.deltares.nl/display/FEWSDOC/09+Report+Module#id-09ReportModule-OutputFileName

2.5 FEWS to work with PostgreSQL 9.3.9 (FB 1602)

The AWIPS program requires an upgrade to PostgreSQL 9.3.9. Delft confirmed that an upgrade to PG 9.3.9 is compatible with FEWS.

2.6 Rating Plot enhancements (FB 1623)

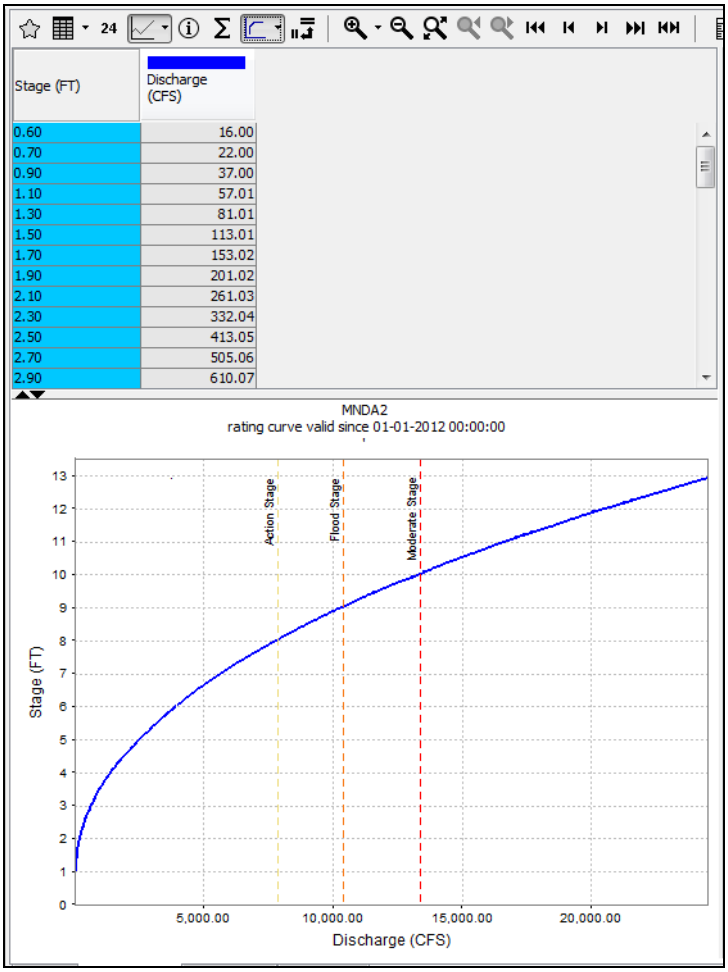
The following RatingCurve display improvements have been made:

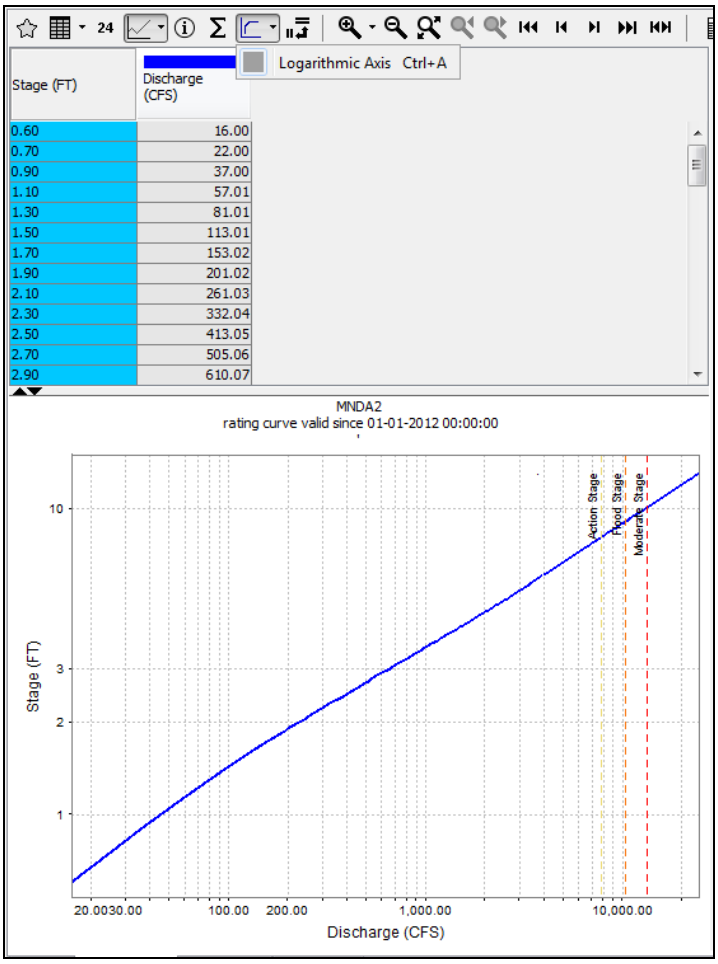
- Thresholds are displayed as vertical markers if stage or discharge are shown on the x-axis
- Stage and discharge are displayed using the precision of the rating curve stage and discharge parameter
- 'Rating curve' button has a menu option 'Logarithmic axis' to switch between linear and logarithmic axes

For some RFCs, the thresholds may not appear on the rating curve plot if the stage and discharge location are different. Some RFCs may append the forecast group abbreviation in the discharge location suffix. Their stage and rating curve locations do not have this suffix. For these sites the thresholds will appear on the rating curve plot if you display the STG time series…accessible from the Data Viewer or via adding another predefined display to include STG.

The default stage axis orientation is horizontal. If the vertical orientation is preferred (stage on the y-axis; discharge on the x-axis), it can be specified in the TimeSeriesDisplayConfig.xml. The following three lines of configuration are required just before the parameterDisplayConfig section:

```
<ratingCurveDisplayConfig>
        <stageAxisOrientation>vertical</stageAxisOrientation>
</ratingCurveDisplayConfig>
```





2.7 Remove Global Writeable Permission Bit from FEWS Generated Files (FB 1856)

As a part of AWIPS 15.1.1, a new security method called a "sticky bit" has been implemented and set for all directories with 0777 permissions. This feature allows only the original creator and root to perform write changes to files in a given directory; however, this breaks the design and implementation of the OC localDataStores in /awips/chps_local on the LX workstations.

By design, FEWS creates the localDataStore directories and sub-dirs like FBSQL's "bin" directory with 0777 permissions to allow all users the ability to modify and share the localDataStore contents. This is unnecessary for the NWS. All CHPS users are a part of the fxalpha group and, thus, are covered sufficiently by the 0775 permissions (remove world-writeable). Directories without world-write permissions (e.g. 0775) are skipped by this mandated sticky bit. We need to either remove the world-writeable default permission of FEWS created files/directories or find another avenue to address this issue.

The FEWS proposed/implemented solution is that the 'writing' of files has been isolated in one single

method in which the permission level will be configurable. Default will still be 777 but other variants will be configurable. This implementation is in the current trunk to be included in 2015.02.

2.8 Automatic “temporary” timeseries setting in FEWS (FB 1880)

FEWS has existing capabilities to identify a timeseries as type "temporary":
<timeSeriesType>temporary</timeSeriesType>

The advantage is temporary timeseries are not written to the DB (reducing the size of the DB), which improves performance (e.g. db synchronization, runtime).

"temporary" was not chosen as the default setting for RFC configs because this prevents timeseries from being able to be analyzed as part of plots (outside of running the workflow). In some cases, this is not a concern so to take advantage of "temporary" a separate set of configurations is needed, which requires scripting to implement. For example, NWRFC uses a separate set of modules with extension "ESP" used when executing ESP workflows (giving them 3 Forecast, UpdateStates, ESP for all models and all locations).

Existing templating functionality may be used to handle this. Already implemented in FEWS 2015.01 is the ability to define property tokens for timeSeriesType.

All items of a timeseries set can be defined as property. So you can define:
<timeSeriesType>$TSTYPE$</timeSeriesType>
for all series that should switch between temporary (for ESP runs) and simulated forecasting (for the deterministic runs)
The output of an ESP run going into a display, export or postprocessing step in another workflow should always remain simulated forecasting

So for an ESP workflow this results in:

```
<?xml version="1.0" encoding="UTF-8"?>
<workflow xmlns="http://www.wldelft.nl/fews"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.wldelft.nl/fews
http://chps1/schemas/workflow.xsd" version="1.1">
    <properties>
        <string key="TSTYPE" value="temporary"/>
    </properties>
    <activity>
        <runIndependent>false</runIndependent>
        <workflowId>Chenango_PreProcessing_ESP_Forecast</workflowId>
    </activity>
    <activity>
        <runIndependent>false</runIndependent>
        <workflowId>CRTN6TGH_Flow_Forecast</workflowId>
        <ensemble>
            <ensembleId>ESP</ensembleId>
```

```
            <runInLoop>true</runInLoop>
        </ensemble>
    </activity>
</workflow>
```

Unfortunately, the property defined at the lowest level will win. So you can NOT define TSTYPE=simulated forecasting inside the segment_Flow_Forecast.xml as it will always overrule the TSTYPE which we've just defined for an ESP run.

So you will have to leave the segment_Flow_Forecast.xml as is, but create a new deterministic segment_flow_forecast which includes the property.
Thus Chenango_DET_Flow_Forecast.xml which will be defined

```
<?xml version="1.0" encoding="UTF-8"?>
<workflow xmlns="http://www.wldelft.nl/fews"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.wldelft.nl/fews
http://chps1/schemas/workflow.xsd" version="1.1">
    <properties>
        <string key="TSTYPE" value="simulated forecasting"/>
    </properties>
    <activity>
        <runIndependent>false</runIndependent>
        <workflowId>CRTN6TGH_Flow_Forecast</workflowId>
    </activity>
</workflow>
```

3 Some general remarks and enhancements

Some of the general enhancements described in the pdfs with new features will affect the CHPS systems as well.

3.1 JRE Version

The required Java Runtime Environment (JRE) belonging to Delft-FEWS 2015.02 is java 1.8.45 (or higher).

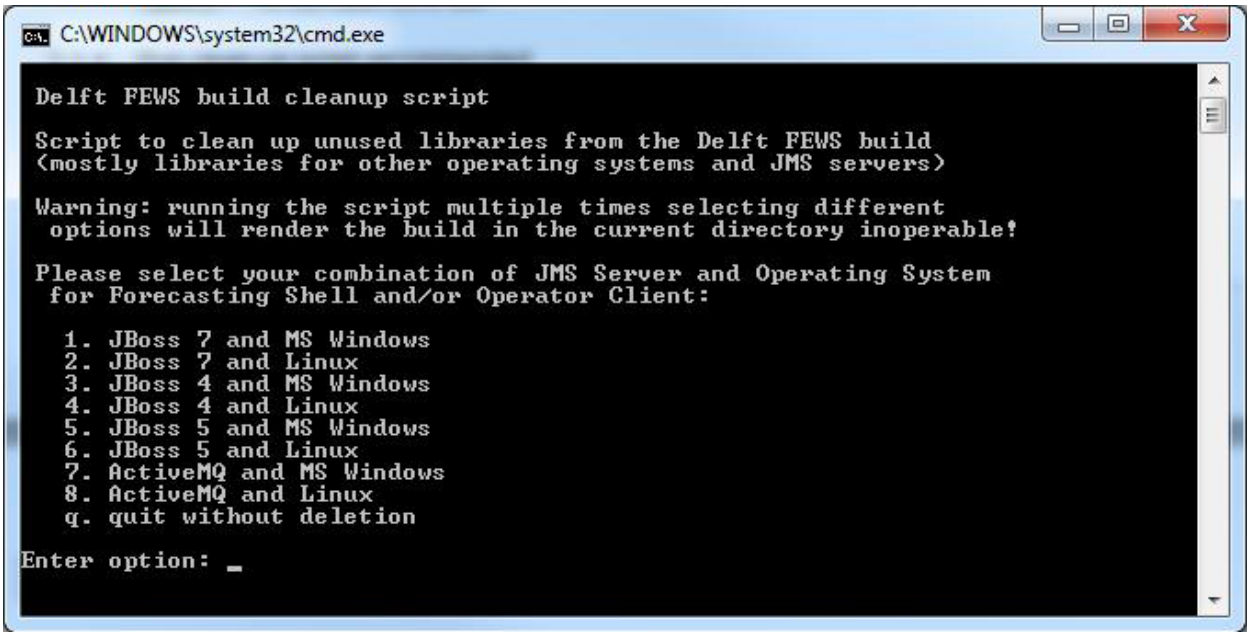
3.2 New Icon

Delft-FEWS has a new icon (see image below). This icon is visible in the different displays/statusbar and other panels like the about box. The java executable – Delft-FEWS.exe - (for Windows) has been provided with this same new icon.

The new Delft-FEWS icon

3.3 Run clean-up script recommended

In the /bin folder a clean-up script (*.bat, *.sh) is provided. It is strongly recommended that the /bin folder for both FSSs as well as OCs are cleaned with the corresponding/required option. This script removes unnecessary libraries and substantially decreases the size of the /bin folder. To prevent errors, please make sure that you only run this script once in this folder. If you made a mistake, delete the /bin folder and unpack the original Delft-FEWS binaries to start again.



3.4 Performance improvements, PostgreSQL upgrade to 9.3 recommended

Since PostgreSQL 9.3 the blobs are no longer sent “as text” over the network. It is strongly recommended to upgrade to this (or a higher) version of PostgreSQL if you use this as a central database. If not, the performance will drop. The network load reduces by (at least) 20% if the PostgreSQL version is 9.3 or higher.

For DDA systems using PostgreSQL it is strongly recommended to upgrade for the max connection check. Otherwise too many clients can cause a shutdown of all MC and FSS due to a lack of free connections.

3.5 Amalgamate improvement checking 'orphan' records

The detection of problems in the Amalgamate module has been improved. An additional check is made to ensure the import run meta-data does not expire sooner than the imported time series data. This is important because amalgamate is no longer possible when the meta-data is gone. The import meta-data is removed by the amalgamate module after amalgamate. There is no need for an expiry date for the import meta-data when amalgamated.

3.6 Editing of time series in a graph

There was a client request to change the default editing behavior of a time series in a graph. After discussions with the NWS, the existing behavior was retained. So users will still get linear interpolation between clicks when moving from left to right. Clicking from right to left in a plot results in individual time series edits.

However, to meet the client request (since 2015.02) the default interpolation can be switched off with an option interpolateBetweenTwoClickedValues=false in the TimeSeriesDisplayConfig.xml. If set to false, simple clicking just changes the single value at that particular time and it does NOT interpolate over gaps between clicks. With this config option, the user can still linearly interpolate between clicks if selecting Ctrl+click. This applies to unit hydrograph mods as well.

```
</tickUnitsConfig>
<graphicalEditingConfig>
        <interpolateBetweenTwoClickedValues>false</interpolateBetweenTwoClickedValues>
</graphicalEditingConfig>
<buttonSettings>
```

3.7 Check Attribute/CSV file Configuration at Startup

Numbers with decimal commas where silently skipped in csv files. Every unparsable comma (",") was recognized as NaN. Only the text NaN, NaN, and empty string are now recognized as NaN. The user gets a message if a decimal comma is detected (Config.Error).

3.8 ActiveMQ as default JMS engine

For new systems, Delft-FEWS Product Management recommends to install ActiveMQ as the JMS engine. For existing systems it is up to the Client to decide (knowing that JBoss4 is end of life) to migrate to ActiveMQ or not. Delft-FEWS 2015.02 runs with JBoss4, 5 and ActiveMQ.

Relevant installation/migration information can be found here:
https://publicwiki.deltares.nl/display/FEWSDOC/Upgrade+JMS+Application+Server

3.9 Export/Import of Mods

In the Modifiers Display there are now Import and Export buttons. These features were added for another client in a 2014.03 release. These Import and Export buttons can be disabled through configuration options in the ModifiersDisplay.xml. Now you can export any selected modifier to a file with the Export button. The Import button will import modifiers from a file which has been exported.

Previously the UNITHG modifier could be exported as a module parameter file as part of calibration enhancements. For the UNITHG modifier there are two export buttons. The “Export” button next to the Re-run button will export a Modifiers file. The “export” button within the UNITHG mod will export the updated or calibrated module parameter file. These files will contain the same parameters, e.g. UHG_ORDINATES, but serve different purposes.

3.10 WaterCoach embedded in FEWS

Previously a separate WaterCoach.jar file was needed to run WaterCoach. With 2015.02 the WaterCoach functionality is included within the Delft_FEWS.jar. WaterCoach is now an official GUI plugin.

Documentation for the WaterCoach can be found at:
https://publicwiki.deltares.nl/display/EAT/Education+and+Training

This includes:
Step-by-step guide to set up a training, including script configuration:
https://publicwiki.deltares.nl/display/EAT/How+to+set+up+a+training

Configuration guide:
https://publicwiki.deltares.nl/display/EAT/Scenario+and+Script+database
https://publicwiki.deltares.nl/display/EAT/Application+configuration
https://publicwiki.deltares.nl/display/EAT/Script+configuration

User guide:
https://publicwiki.deltares.nl/pages/viewpage.action?pageId=120820368 (from 2016.01 onwards, though most functionality exists within 2015.02)

3.11 Config template tokens can apply to all TimeSeries elements

The relative view period, time step, time series type and value type of a time series set may now contain a property (VAR).

```
<timeSeriesSet>
        <moduleInstanceId>import</moduleInstanceId>
        <valueType>scalar</valueType>
        <parameterId>H.obs</parameterId>
        <locationId>H-2001</locationId>
        <timeSeriesType>$TIME_SERIES_TYPE$</timeSeriesType>
        <timeStep unit="day"/>
        <relativeViewPeriod unit="day" start="$START_DAYS$" end="1"/>
        <readWriteMode>read only</readWriteMode>
</timeSeriesSet>
```

3.12 Viewer for location configuration csv and dbf files

A viewer has been added to display location configuration csv and dbf files. They are displayed in a table that can be sorted, filtered, and columns can be hidden. For more documentation see:

https://publicwiki.deltares.nl/display/FEWSDOC/20.+Tabular+Config+Files+Display

```
<explorerTask name="Tabular ConfigFiles Display">
    <iconFile>csvfile.png</iconFile>
    <mnemonic>L</mnemonic>
    <predefinedDisplay>tabular config files display</predefinedDisplay>
    <toolbarTask>true</toolbarTask>
    <menubarTask>true</menubarTask>
    <accelerator>ctrl L</accelerator>
    <toolWindow>false</toolWindow>
    <loadAtStartup>true</loadAtStartup>
</explorerTask>
```

3.13 Workflow Navigator can now show grids, longitudinal profiles and scalar maps

To view a grid, longitudinal profile and scalar map series from the Workflow Navigator, use context menu items “Show grids”, “Show longitudinal profiles”, and “Show scalar maps”. These menu items are only enabled when the selected WFN tree items have one of the above mentioned time series types. When there are several gridded time series available, a dialog will popup where a single series should be selected first, and then the spatial display will be opened with the selected series.

3.14 Extra columns in database viewer and forecast management display for FSS ID

The column ‘FSS ID’ is now visible in all tabs of the Forecast Manager and contains Forecasting Shell Id of the task run or is empty in case of local runs. This column has also become visible in other plugins that show task run lists, e.g. database viewer.

3.15 Toggle on/off bed elevation (z-coordinate) in longitudinal profile plots

This menu option is available in the chart drop down menu in TimeSeriesDisplay. Use this option to hide or show the “Longitudinal profile characteristics” (river bed, left bank level, etc.) in the longitudinal profile plots. The longitudinal profile characteristics are configured in Branches.xml. This menu option is only visible if there is at least one longitudinal profile marker (riverBedLevel, leftBankLevel, etc.) configured in TimeSeriesDisplayConfig.xml.

3.16 Plot Overview “zoom to thresholds”

The plot overview displays (thumbnail plots) now respect turning off of thresholds. If the forecaster sets the display to "No thresholds" then the Plot Overview thumbnails respect this change. Previously, the Plot Overview thumbnails defaulted to "Scale to show relevant thresholds". This may assist in detecting model run changes when using only one monitor and looking at the thumbnail plots while in the Modifiers Display.

3.17 Qualifiers can now be considered during primary validation

Previously, when matching TimeSeriesSets during primary validation qualifiers were not considered per default. Now by adding the <considerQualifiers>true</considerQualifiers> element to the validationRuleSet, the qualifiers also have to match for the validationRuleSet to apply.

3.18 Build loop in workflow for a locationSet (comparable to EnsembleLoop)

For a workflow, a location-loop can be defined in which each location in a location set is run separately. The $LOOP_LOCATION_ID$ tag in the configuration can be used to point to the corresponding locationID of the current location. This is useful in combination with (related location) constraints, because then it is possible to filter a locationSet on the basis of the $LOOP_LOCATION_ID$.

```
<activity>
        <runIndependent>true</runIndependent>
        <moduleInstanceId>ModuleInstanceId</moduleInstanceId>
        <loopLocationSetId>LocationSetId</loopLocationSetId>
</activity>

In the ModuleInstance (e.g. exportActivity of a GeneralAdapter) in every
'loop' the $LOOP_LOCATION_ID$ tag will be replaced with the 'actual'
locationId.

<timeSeriesSet>
     <LocationId>$LOOP_LOCATION_ID$</LocationId>
</timeSeriesSet>
```

3.19 Log.txt files will be copied to log.txt.old after FEWS restarts

After a restart, FEWS previously overwrote existing log.txt files. Now, just before a shutdown of FEWS, the current log.txt file will be copied to log.txt.old.

3.20 More flexibility in searching/selecting of locations/parameters in filters

Locations, parameters and qualifiers now have the ability to be selected with checkboxes. To do so, right click on the windows for which you want the checkbox selection and select “CheckBox selection”. With checkbox selection, selecting the label does not select the item. You will have to check the checkbox to select the item. This will avoid the use of using the Ctrl button in selecting multiple locations/parameters.

3.21 Improved visualization of data points in scatterplots

Scatterplot points now show the date in the tooltip and support seasonal colors. Since some points in the scatterplot can occur more than once, the date of the first point in the timeseries will be used. Seasonal colors are supported by configuring seasons inside the statisticalFunction element using monthDay attributes different seasons can be configured. Overlapping seasons are not supported.

```
<statisticalFunction function="scatterPlot" label="Seasonal Scatterplot">
<season startMonthDay="--03-31" label="Jan,Feb,Mar" color="orange"/>
<season startMonthDay="--06-30" label="Apr,May,Jun" color="green"/>
<season startMonthDay="--09-30" label="Jul,Aug,Sep" color="yellow"/>
<season startMonthDay="--12-31" label="Oct,Nov,Dec" color="red"/>
</statisticalFunction>
```

4 Solved bugs

Solved bugs for NWS and BPA are listed in the table below.

FB	JIRA	Description
531	10661	“Shift values in time” modifier option for TSCHNG mod leaves missing values
1340	12950	PCA modules very slow
1418	11467	Null pointer error with QPF Duration modifier with Num Lock off
1455	13066	XML export valueResolution different for pixml than shef
1717	12823	F12-Acknowledge all doesn’t acknowledge some MC errors
1733	12673	Uncommitted Modifiers with DDA OC
1803	13820	Can’t delete a modified mod
1817	13259	Missing –Djava.awt.headless=true in FEWS 2014.02 fews_piservice.sh
1818	13260	Mod ‘active’ button selection causes Creation time and User to update
1831	13335	Mod refreshes while editing
1832	13797	FEWS crashes accumulating QPF grids
1833	13762	Paste doesn’t work in unit hydrograph modifier
1837	13676	PI-service not shutting down properly
1844	13675	PIService Failing Overnight with timeSeriesGroup.getSingularGroupIndex == -1
1849	13844	SA Missed WorkflowId Exception in Configuration Check
1860	13855	showModifiers doesn’t show all modifiers
1877	13821	<showModifiers> Allows “Re-run” Modifier Button; circumvents permissions
1879	13870	“read only” time series is editable (incorrect time series edits in Plots)
1884	13715	OC DataStore RowCache becomes corrupt forcing client restart
1903		Request to receive an updated WaterCoach
1908		Forecaster Notes disappearing